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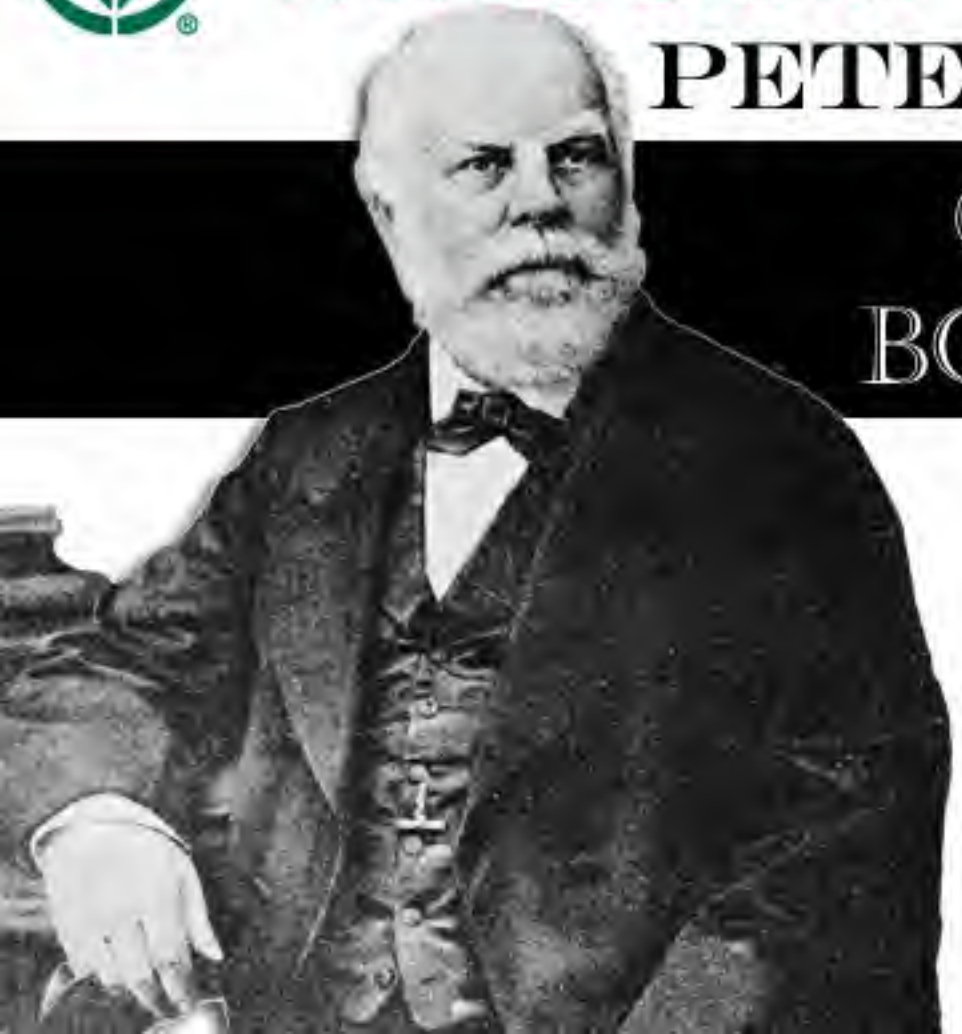
George Engelmann Botanical Notebooks



Pagination Note:
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VI. The appearance of negative electricity was connected in

1861. No. times.	1862. No. times.	
30	32	with thunderstorms.
23	28	with rains without thunder and lightning.
20	4	with dry storms (without rain and without thunder and lightning).
4	3	with snow.
1	0	with fog.
78	67	

VII. *Relation of Rain and Snow to Electricity.*

Rain without thunderstorm was accompanied

	By Positive Electricity.		By Negative Electricity.		By no Electricity.	
	In 1861.	In 1862.	In 1861.	In 1862.	In 1861.	In 1862.
January	7	5	3	2		2
February	2	1	4	1		
March		5	6	4		
April	8	6	7	11		1
May	10	7	1	1	3	1
June	7	1				3

0 1 2 3 4 5 6 7 8 9 10
cm
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interrupted descent and ascent took place from January to December, we find in 1862 some interruptions in the steps of that ladder. The electricity in February, 1862, is about four degrees higher than that of January, April somewhat higher than March, and July is the lowest instead of September in 1861. These trifling irregularities may be accounted for by differences in temperature and relative humidity, and by a greater number of thunderstorms in 1862. January of 1862, for instance, was so unusually rainy, that its relative humidity too was unusually high, diminishing thus electricity. But the general features of distribution of electricity throughout the year are apparent in both years, and we may in that respect divide the twelve months of each year into two or three groups. Computing the months which give the highest electricity and those which give the lowest in each year, we find that in both years the months of January, February, March, April, November and December exhibit the highest, and the months of May, June, July, August, September and October the lowest electricity. The first group gives

The aggregate monthly mean of 71.5 degrees of electricity in 1861
" 1862

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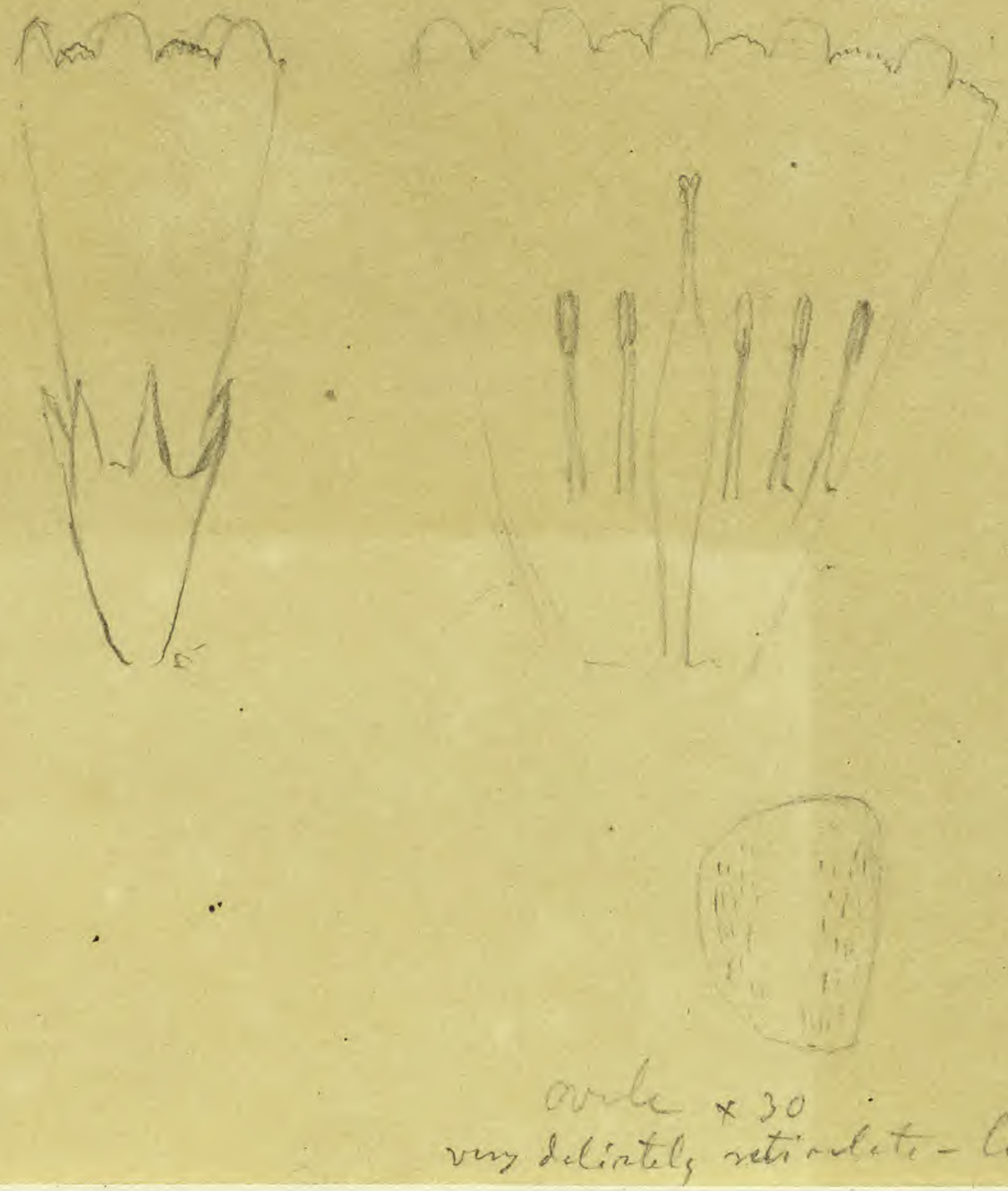
Gentiana alpina

Nov 20 1874

Lederbour mss



Stigma x10

Anther x10 erect introrse

ovule x30
very delicately reticulate-lineolate

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PHARMACEUTICAL CHEMIST,

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Sect. VIII Cyclostigma Griseb. DC. Prod. 9. 103

includ: Gent. adsc'rulosa, a'valis &c.

Corresponds better with my Calyfornia Genus rotula than any other section: except the pods of the Corolla which are exactly = as my plant, and characterist for Cyclostigma — thus approaches T. Crossopetalum.

Anthers — —

G. rivosa Vaamua — tetramera, calyce lapso — parvula — longe pedunculat

& Dentata, corolla globosa ovatis obtusis erectis emarginatis late

corolla glabris glabellis destitutis coronique

filamentis puncis, discretis, corolla tubo brevibus

antheris ovatis obtusis. capsula ovata sessili

semina ovata globosa. testa rubella

Alex. Leitch,

APOTHECARY & CHEMIST,

Cor 4th & Olive Sts. St. Louis.

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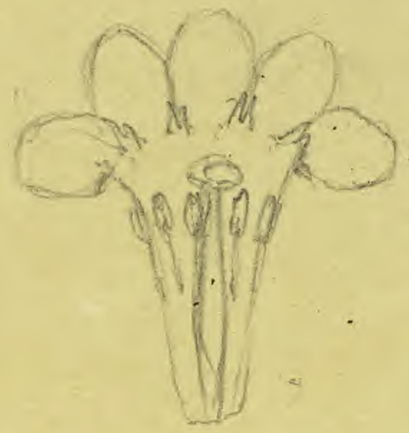
Gentiana verna

J.E Valais Octob 1857

Nov 20 1874



anthers erect introrse

ovule × 30 reticulate

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ering.

Dimensions.—Length, 0.20 of an inch; width, 0.18.

The *Elæacrinus Kirkwoodensis* is nearly allied to *E.* (*Pentremites*) *melo*, from which it is distinguished by its much smaller size and less deeply excavated base. It also occupies a higher geological position.

Occurs in the St. Louis Limestone (Carboniferous) on the Pacific railroad near Kirkwood, St. Louis county, Missouri.

9 Crinoidea 71-2

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as range of mountains, on Capt. Simpson's return trail. Circumstances prevented me from obtaining more than a few crystals, which are now deposited in the collection of the Smithsonian Institute; a few others are also in the hands of members of the party. We were travelling at the time by forced night marches with nearly worn out animals, seeking to gain a spring of water in a distant range of mountains. This desert was then entirely unexplored. I have but little doubt that more interesting materials are to be found at the same point.

The mountains of the former Territory of Utah promise a rich yield to the mineralogist. We know already of gold and silver ores in the east, west and south part of that district; of copper and lead ores in the south, and I have discovered the latter also in the centre of it; of specular iron ores and native sulphur in the Rocky Mountains and near Little Salt Lake; of rock salt in the mountains south-east of Utah Lake; of native alum near Salt Lake; of various other salts in the deserts; and of silicates, composing the granites, porphyries, diorites, trachytes, and lavas, nearly over the whole area.

4022

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×10

13

11

10

Parryi ?

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306 Gentiana prostrata

annua Saowy range J. Parry

Aug. 1861

corolla

calyx

×4

×10

seed

×4

×10

×4

flower

calyx 4-carinate

lobes stigmatic
orbiculate reflexi

Capsule

Pollen

×420

Gent. prostrata Haenke

DC. Prod IX. 106.

sed caps. basi attenuat
nec rotundat

plures saepius tetragon

Sp. nov Parryi?

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Gentiana humilis

Altai, Ledebour

Jan 1861

×4

×10

sem. tenuissime reticulat

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Gent. frigida Jan 21 1878
Colombo Q.B. Aug 1874

3 3 3

2 2 2

1 a 1 á 1

y y y

2 4 3 5 F F 5 3 4 2

1 a 1 á 1

y

a a axillary
2.2 – 3.3 – 4.4, the following
Cal-pairs –
5.5 bracts from the axils of which the lateral flowers f' f'' spring; F terminal flower
bud á has broken through the sheath. 1.1.

Lowest branches of leaves 1.1. which are connected by a long sheath

4027

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G. sceptrum 426 "Gaud affinis" Nov 9 1874

Oregon coll E Hall 1871

G. sceptrum

Calyx spathaceus membrana hyalina inter costas instructus

inside of Calyx

bracteis binis plenis (1½-2 Cin) remotis suffultus

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Zeilleria Mengziesii

Nov 6 1874

E L Greene #No 612
High Sierra summit Station 9500' alt. Oct 13

membrane connecting calyx lobes transparent, entire or here & there lacerate

ovule x 30
(evidently a winged seed)

scarious portion border of (dry) leaf — x60
slightly rough

The calyx is exactly that of Mengziesii
but folds of Corolla longer,
leaves broader, and not quite entire
Corm not obtained, upper Growth orbicular-ovate

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Genl frigida

Fr- 1861

Dr Parry 1305

×4

×4

×10

1001

seeds unripe

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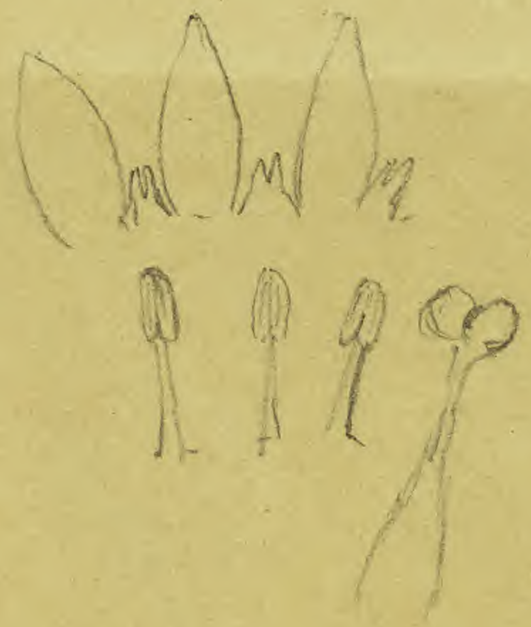
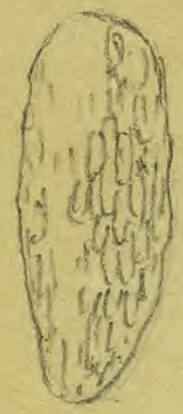
Justicia retirulosa ⊙ Nov 20 1874

Manaos —

x2

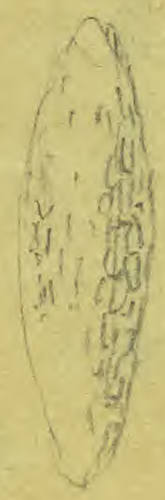




red — x 30

linear-oblong

retirulate - linulate



J. Correia

Fendler

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Gentiana Tweedii Torr.

= humilis Gr Parry

x 4

x 4

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4033

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Gentiana Fremontii Torr
=humilis Gr Parry leg. 1861, Pikes Peak Colorado
135

oct. 1861

×4

×4

×4

×4

×8

capsula longissime stipitat.

seeds smooth brown

fls 4-5 ℄ long, green

caps. inclusa prominens, breviter stipitate.

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July	2	4	.....	.....	.....	3 .....
August.....	3	.....	1	.....	1	2 .....
September.....	4	.....	.....	1	4	8 .....
October	3	1	1	1	7	1 .....
November	2	3	.....	7	.....	7 .....
December	2	3	.....	.....	.....	6 .....
	50 + el.	36 + el.	23 — el.	28 — el.	15 no el.	34 no el.

Snowing was accompanied

	By Positive Electricity.		By Negative Electricity.		By no Electricity.	
	In 1861.	In 1862.	In 1861.	In 1862.	In 1861.	In 1862.
January.....	3	9	.....	2	.....	.....
February	12	8	.....	1	.....	.....
March	3	12	.....	.....	.....	.....
October.....	.....	1	.....	.....	.....	.....
November	.....	4	.....	.....	.....	.....
December	5	2	2	.....	.....	1 .....
	23 + el.	36 + el.	2 — el.	3 — el.	.....	1 no el.

REMARKS.

The monthly mean of atmospheric electricity in 1862 was not quite so regular as that in 1861. While in 1861 an un-

28-52

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December; the second with a mean electricity by the months of March, April, May and October; and the third with the lowest electricity by the months of June, July, August and September.

The aggregate monthly mean of

The first group in 1861 is	52.9	—in 1862,	54.6
The second	"	"	33.5	"	35.2
The third	"	"	14.1	"	10.5

Thus in 1861 the third group prevailed, and in 1862 the first and second. But these differences are so well balanced throughout the year, that the mean of the whole year in 1861 and in 1862 is exactly the same, namely, 8.4. Such an identity in the yearly result, even to decimals, is of course not to be expected every year; but it seems to prove, at least, that the yearly mean of electricity is as constant as that of temperature, of relative humidity, and of atmospheric pressure.

The third table, showing the daily periodicity of atmospheric electricity, confirms the daily two maxima and two minima of electricity as an undeniable fact.

Pneumonanthe

Anthers free

seeds wingless

2 G. angustifolia
5 G. Parryi
6 G. menziesii ?
7 G. calycosa ?
3 G. saponifera
4 G. Andrewsii ?
1 G. ochroleuca
8 G. platypetala ?

9. G. Fremontii } minute
10. G. glauca } winged

seeds winged

12 affinis
13 puberula
11 Newberryi ?

Anthers cohering seeds winged

14 Elliottii
15 alba
16 Saponaria
17 Andrewsii

Rheumonanthe

Dec 18 – 74

anthers free

G. frigida W?
G. glauca W?
G. pubenla W
G. ochroleuca W
G. affinis W
G. angustifolia W
G. platypetala W?
G. Macfarlanei W
G. Parryi W
G. sceptrum W
G. Drummondii W
~~G. Elliottii? W = pubenla fide Gray~~

G. Calycosa W?

anth connate

G. Saponaria W
G. Andrewsii W
G. alba W
G. Elliottii Asp. W

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Genl affinis

Henry Leyland

Dec 1861

calyx spathaceo

anthers distinct

X4

X4

capsule

X10

val. majore ovali integra

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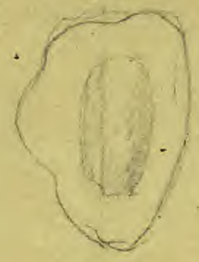
Fruit & seed
Type & 2½
Empire

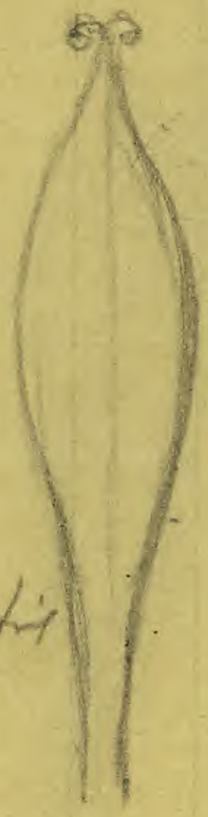
stam adnate to petal

section of ovary showing how the carpels form placentae for the inner cavity of the ovary while the fruit itself is a loose sack enveloping it and attached to it only at the marginal commissures



seed X10

Anther extrorse in bud as well as in effete flower



style X2

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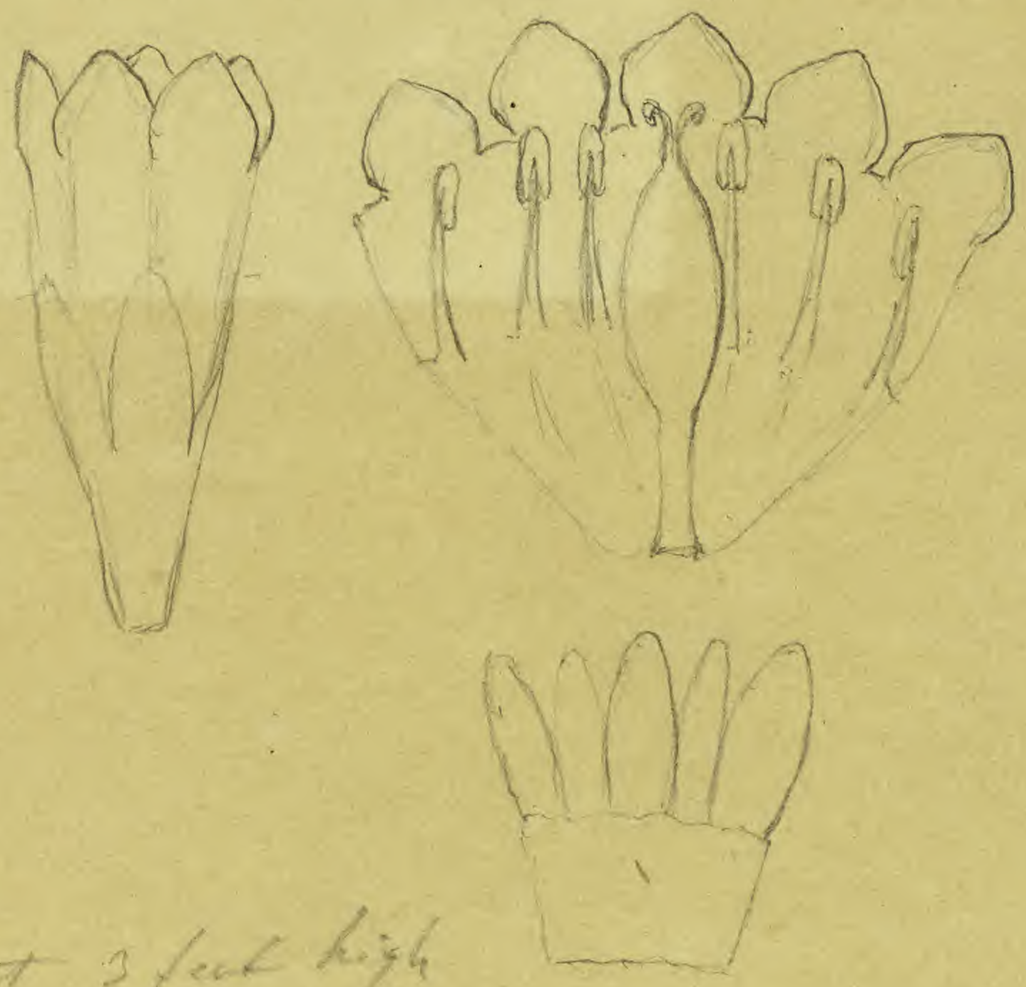
Gentiana scrpitum

Nov 18 1874

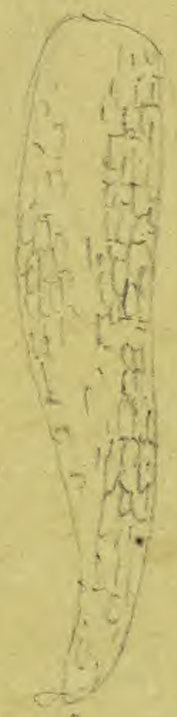
Oregon E Hall 1874

wet prairie near Salem × 2

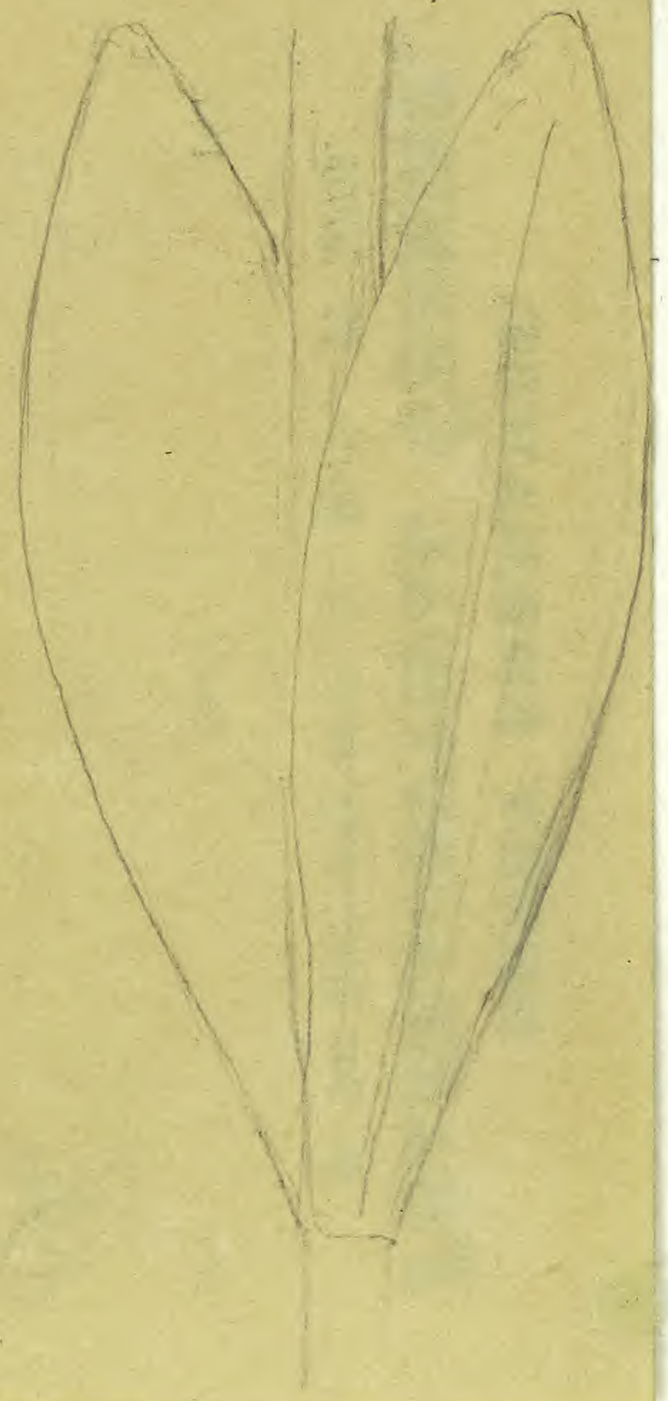


Plant 3 feet high
most flowers subsessile
but with no special bracts
Whole plant much like Hookeri figure
= flor. Bor. Am

inside of calyx



seed × 30
reticulate



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126 Gentiana Scopulorum Nov 18 1876
var parva
Drey — Ell Hall 1876

ovule x 30

spithamea, s. vix pedalis
adscendens uni-pauciflora angustifolia
floribus basilaris s. nudis

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Gentiana Oregana n sp.
Blue Mountains, Oregon

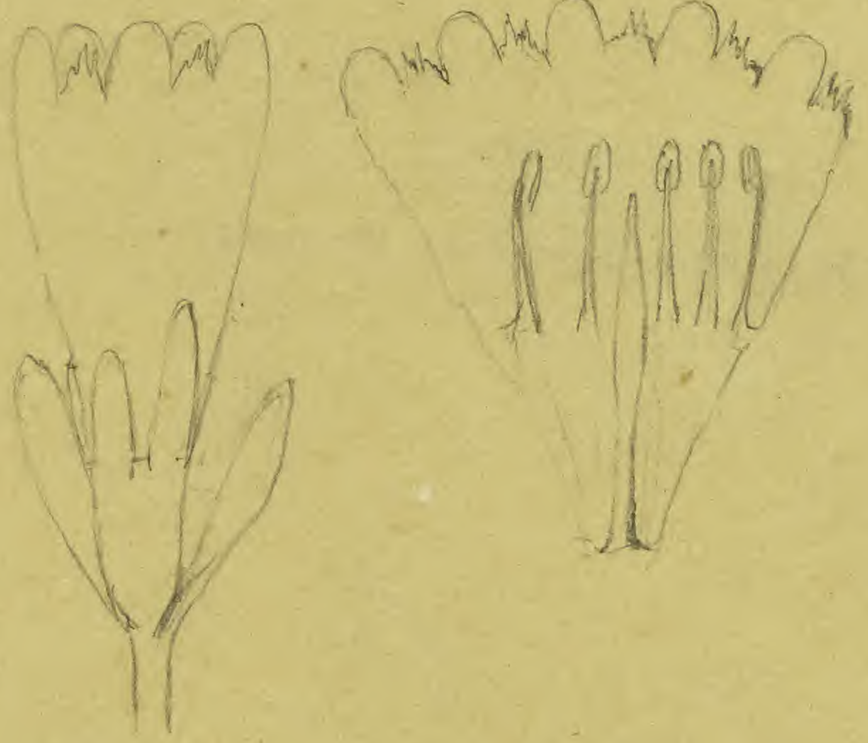
Nov 17 1874

Rev R S Nevins 1874 Grey del

s-b now. G. sceptrum

Form of G. affinis

fide Gray



Caule stricto
foliis ovatis (15–18 lin longis 8–12 latis)
obtusis
floribus 1¾ poll longis racemosis, ramis ramulis 1–3 floribus brevibus
strigulis bicostatis
Calycis integri lobis oblongo linearibus obtusis inaequalibus membrana juncta
corollae lobis ovatis obtusis, brevibus, plicis basi aequalibus lacerato bicuspidatis
staminibus tubo brevioribus, filamentis liberis (pistillum superantibus) --

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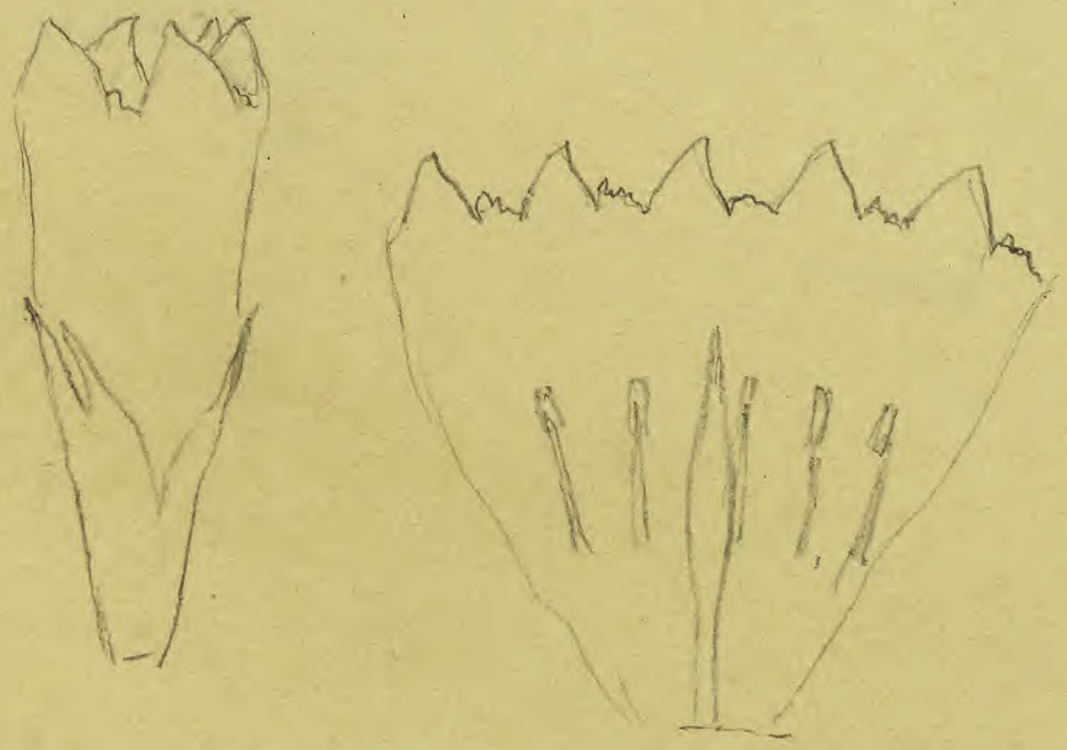
Gentiana frigida
Alaska, Mrs Harrington 1871-2

Nov 11 1874



calyx 5 pitted
lobes 2-toothed at base
unequal

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Gentiana frig.da

Nov 11 1874

Mount Flora, Col. Aug 1874

ovule x 30

seed x 30
narrowly winged on one side
grossly reticulate - coat

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Gentiana spathacea H&B K

Nov 12 1874

Mexico, Ehrenberg No. 1051

Griesbach Det. 1857

ovule
×60

stamens as long as pistil
equal to pistil
lobes not revolut

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0 1 2 3 4 5 6 7 8 9 10
cm
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MISSOURI BOTANICAL GARDEN

S. Pneumonanthe Dec 1861

Germany

lobes orbicular oval acute
folds $\frac{1}{3}$ or $\frac{1}{4}$ th length of
lobes forming a
single acute tooth

upper pair of leaves
somewhat distant from flower
or closely approached and
taking the place of bracts.

× 10

0 1 2 3 4 5 6 7 8 9 10
cm
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Missouri Botanical Garden

M. W. ALEXANDER,

SOUTH-EAST CORNER OF FOURTH AND MARKET STREETS,

ST. LOUIS.

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

4046

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